

Appl. No. 10/033,258
Amtd. Dated Oct. 7, 2003
Reply to Office Action of July 8, 2003

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-12 (cancelled)

Claim 13 (currently amended): An optic switch comprising:
a casing;

at least ~~two~~ a first and second optic input devices for directing optic signals into the optic switch;

at least ~~two~~ a first and second optic output devices for directing the optic signals out of the optic switch;

a movable reflection device comprising two movable reflective surfaces and movable between two positions; and

a fixed reflection device comprising at least one fixed reflective surface;

wherein when the movable reflection device is at a first position, light from the first optic input device directs to the first optic output device, light from the second optic input device directs to the second optic output device, when the moveable reflection device at a second position, light from the first optic input device reflected by a first movable reflective surface and the fixed reflective surface to the second output device, light from the second input device is reflected by a second moveable reflective surface and direct to the first output device. ~~the optic signal that is directed into the optic switch by one of the optic input devices is reflected at~~

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~~least two times by one of the movable reflective surfaces and the fixed reflective surface in order to be redirected into one of the optic output devices.~~

Claim 14 (currently amended): The optic switch as claimed in Claim 13, wherein ~~when the~~ movable reflective surfaces are parallel to the fixed reflective surface.

Claim 15 (cancelled).

Claim 16 (currently amended): The optic switch as claimed in Claim ~~15~~14, wherein the first optic input device is substantially coaxially aligned with the first optic output device in a first direction, and wherein the second optic input device is substantially coaxially aligned with the second optic output device in a second direction.

Claim 17 (currently amended): The optic switch as claimed in Claim ~~15~~16, wherein the second moveable reflective surface is located at a joint point of the first and second directions, the first moveable reflective surface is not located the joint point, a first optic path is formed between the first optic input device and the first optic output device and a second optic path is formed between the second optic input device and the second optic output device, the first and second optic paths intersecting each other, and wherein one of the movable reflective surfaces is located at the intersection of the first and second optic paths for reflecting and redirecting an optic signal from the second optic input device to the first optic output device.

Claim 18 (original): The optic switch as claimed in Claim 13, wherein the optic input devices and optic output devices are mounted in the casing.

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Claim 19 (currently amended): The optic switch as claimed in Claim 13, further comprising two reinforcing walls formed inside the casing and supporting the optic input devices and optic output devices.

Claim 20 (original): The optic switch as claimed in Claim 19, wherein each reinforcing wall comprises two branches.

Claim 21 (original): The optic switch as claimed in Claim 19, wherein each branch of each reinforcing wall defines a bore for receiving and retaining a corresponding one of the optic input and output devices and a collimating device of the one of the optic input and output devices.

Claim 22 (currently amended): The optic switch as claimed in Claim 13, further comprising a stop for limiting the movement of the movable reflective surfaces.

Claim 23 (currently amended): An optic switch comprising:
a casing;

a first optic input device attached to the casing;

a first optic output device attached to the casing and aligning with the first optic input device in a first direction;

a second optic input device attached to the casing;

a second optic output device attached to the casing and aligning with the second optic output device in a second direction;

a movable reflection device having first and second reflective surfaces and movable between first and second positions, at least a reflective surface located at an intersection of the first and second directions;

a fixed reflection device comprising at least a reflective surface which is opposite to and parallel to ~~one of the reflective surfaces of the movable reflection~~

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device the reflective surface located at the intersection and a predetermined distance is defined therebetween;

a driving device for driving the movable reflection device between the first and second positions; and

a cover;

wherein when the movable reflection device is at the first position, the movable reflection device is located outside a first optic path formed between the first optic input device and the first optic output device and a second optic path formed between the second optic input device and the second optic output device, whereby an optic signal from the first optic input device follows the first optic path toward the first optic output device and an optic signal from the second optic input device follows the second optic path toward the second optic output device; and

~~wherein~~ when the movable reflection device is at the second position, the movable reflection device is located on the optic paths, the optic signal from the first optic input device is redirected to the second optic output device and the optic signal from the second optic input device is redirected to the first optic output device.

Claim 24 (currently amended): The optic switch as claimed in Claim 23, wherein the casing defines four opposite holes ~~on~~in four corners thereof, two reinforcing walls being formed inside the casing, each reinforcing wall having two branches, and a holder for holding the fixed reflection device being formed in the casing.

Claim 25 (original): The optic switch as claimed in Claim 23, wherein each branch of each reinforcing wall defines a bore.

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Claim 26 (original): The optic device as claimed in Claim 24, wherein the holder defines a recess for receiving and retaining the reflective surface of the fixed reflection device.

Claim 27 (original): The optic switch as claimed in Claim 23, wherein each of the optic input and output devices comprises a capillary, a securing member and a strain relief.

Claim 28 (currently amended): The optic switch as claimed in Claim 27, wherein the securing member secures ~~the~~an associated one of the optic input and output devices to the corresponding hole of the casing.

Claim 29 (original): The optic switch as claimed in Claim 28, wherein the strain relief is attached to the securing member.

Claim 30 (original): The optic switch as claimed in Claim 27, wherein each of the optic input and output devices comprises a fiber extending through the strain relief and the securing member and having an end attached to the capillary.

Claim 31 (original): The optic switch as claimed in Claim 23, wherein the optic input devices, the optic output devices, the movable reflection device and the fixed reflection device are received and fixed inside an interior space defined between the casing and the cover.

Claim 32 (original): The optic switch as claimed in Claim 24, wherein the optic input and output devices are secured to the branches of the reinforcing walls.

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Claim 33 (original): The optic switch as claimed in Claim 23, wherein the driving device comprises an arm connected to the movable reflection device for moving the movable reflection device between the first and second positions.

Claim 34 (original): The optic switch as claimed in Claim 33, wherein a retainer is attached to the arms of the driving device, the first and second reflective surfaces being retained in the retainer.

Claim 35 (original): The optic switch as claimed in Claim 23, wherein the driving device comprises a relay or a solenoid.

Claim 36 (original): The optic switch as claimed in Claim 23, wherein the first and second reflective surfaces of the movable reflection device and the reflective surface of the fixed reflection device are formed by a coating of high reflectivity material.

Claim 37 (currently amended): The optic switch as claimed in Claim 23, further comprising a stop for limiting the movement of the movable reflection device.

Claim 38 (currently amended): An optic switch comprising:

a casing to which a first input device, a first output device, a second input device and a second output device are attached, the first and second input devices being adapted to convey optic signals into the optic switch and the first and second output devices being adapted to convey optic signals out of the optic switch, the first input device aligning with the first output device, the second input device aligning with the second output device;

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a movable reflection device arranged in the casing and movable between a non-engaged position and an engaged position, the movable reflection device having first and second reflective surfaces; and

an additional third reflective surface which is parallel to and opposes the first reflective surface when the movable reflection device is at the engaged position;

wherein when the movable reflection device is at the non-engaged position, optic signals conveyed into the optic switch by the first and second input devices are allowed to directly pass to the first and second output devices respectively, while when the movable reflection device is at the engaged position, the optic signal conveyed into the optic switch by the second input device is reflected by the second reflective surface to the first output device and the optic signal conveyed into the optic switch by the first input device is reflected at least three times by both the first reflective surface and the third reflective surface and redirected to the second output device.

Claim 39 (currently amended): An optic switch comprising:

an input device and first and second output devices, the input device being adapted to convey an optic signal into the optic switch, the first and second output devices being adapted to selectively convey the optic signal out of the optic switch, the input device and the first output device being aligned with each other;

a primary reflection device having a primary reflective surface movable between a non-engaged position and an engaged position; and

a secondary reflection device having a secondary reflective surface which is parallel to and opposes the primary reflective surface when the primary reflection device is at the engaged position;

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wherein when the primary reflection device is at the non-engaged position, the optic signal is allowed to directly pass to the first output device and when the primary reflection device is at the engaged position, the optic signal is reflected by the primary and secondary reflective surfaces and redirected to the second output device.

Claim 40 (original): An optic device comprising:

first and second optic inputs and first and second optic outputs, the first input and the first output being aligned with each other and forming a first optic path therebetween, the second input and the second output being aligned with each other and forming a second optic path therebetween, the first and second optic paths intersecting at an intersection point, the first and second optic inputs being adapted to respectively convey first and second optic signals to the first and second optic outputs along the first and second optic paths;

a first reflective surface being positionable on the optic paths but not exactly at the intersection point thereof, an auxiliary reflective surface being positioned opposite to the first reflective surface and cooperating with the first reflective surface for reflection and redirection of the first optic signal toward the second output; and

a second reflective surface being positionable at the intersection point of the optic paths for reflection and redirection of the second optic signal toward the first optic output.